RUAHA CATHOLIC UNIVERSITY

(RUCU)

FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY

DEPARTMENT: COMPUTER SCIENCE

COURSE NAME: RESEARCH METHODS

COURSE CODE: 311

LECTURER NAME: MADAM TUMAINI EDGAR

DATE OF SUBMISSION: 12/12/2025

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QUESTION:

From the previous session, take any paper from google scholar of your choice and answer the following question.

1. Summarize the introduction
2. The name of the paper with the author's name
3. Summarize the problem statement
4. Provide the objectives
5. Provide the gap of the paper

1. Name of the Paper and Authors

Title: "Generalizable machine learning for stress monitoring from wearable devices: A systematic literature review"

Authors: Gideon Vos, Kelly Trinh, Zoltan Sarnyai, Mostafa Rahimi Azghadi

2. Summary of the Introduction

Stress consists of psychological and biological components influenced by individual differences. Wearable devices can capture biometric signals useful for stress monitoring, but current machine learning models lack the ability to generalize across different people. This is due to inconsistent labeling, small datasets, and variability in human stress responses. The paper aims to provide a broad overview of stress detection research using wearable sensors and machine learning.

3. Summary of the Problem Statement

The main problem identified is that stress detection models created from wearable data do not generalize across individuals. Models trained on one dataset fail when tested on new users or real-world environments. This challenge is driven by the shortage of standardized datasets, inconsistent labeling techniques, and biological variation among individuals.

4. Objectives of the Paper

1. To survey current research on wearable-based stress detection using machine learning.

2. To identify and review available stress-related datasets.

3. To analyze the machine learning techniques used in the reviewed studies.

4. To highlight challenges and suggest future research directions for achieving better generalization.

5. Research Gap Identified

The paper identifies several research gaps such as the lack of large and diverse datasets, poor labeling standards, and limited generalization of existing machine learning models.

These issues make it difficult to develop accurate and widely applicable stress detection systems using wearable technology.

References

APA: Vos, G., Trinh, K., Sarnyai, Z., & Rahimi Azghadi, M. (2023). Generalizable machine learning for stress monitoring from wearable devices: A systematic literature review. *Journal of Biomedical Informatics, 145, 104423*

MLA: Vos, Gideon, et al. "Generalizable Machine Learning for Stress Monitoring from Wearable Devices: A Systematic Literature Review." *Journal of Biomedical Informatics, Vol. 145, 2023, p. 104423.*

IEEE: G. Vos, K. Trinh, Z. Sarnyai, and M. R. Azghadi, "Generalizable machine learning for stress monitoring from wearable devices: A systematic literature review." *Journal of Biomedical Informatics, Vol. 145, p 104423, 2023*